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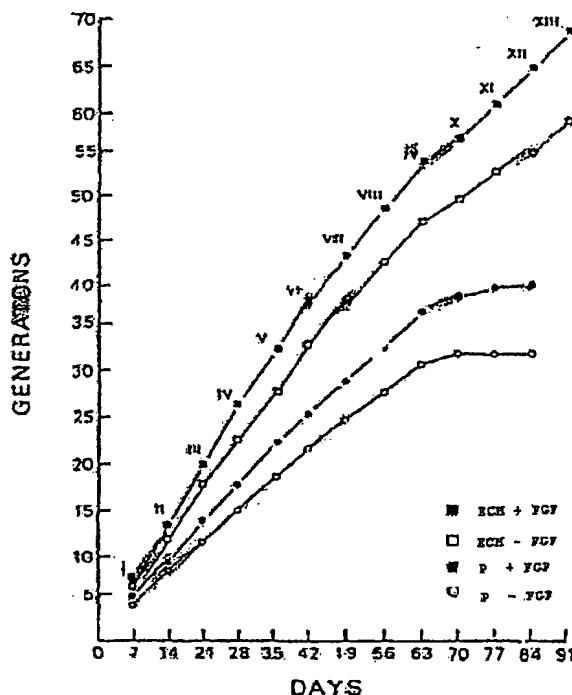
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(54) Title: METHODS AND COMPOSITIONS FOR GROWING CORNEAL ENDOTHELIAL AND RELATED CELLS ON BIOPOLYMERS AND CREATION OF ARTIFICIAL CORNEAL TRANSPLANTS



(57) Abstract: This invention discloses methods to attach and grow a monolayer of cultured human corneal endothelial cells onto the endothelial side of the stroma synthesized from biopolymer to generate a more bio-equivalent artificial cornea. The approaches will include the use of attachment and growth-promoting agents such as fibronectin, laminin, RGDS, collagen type IV, bFGF conjugated with polycarbophil, and EGF conjugated with polycarbophil. The patent also describes a method to create a self-sustaining polymer containing adhesive molecules and growth factors to support the attachment and proliferation of cultured human corneal endothelial cells for corneal transplantation either as a half thickness device or full-thickness button replacement. An approach for the implantation of cultured retinal pigment epithelial (RPE) cells into the sub-retinal space for treatment of age-related macular degeneration (ARMD) is disclosed in this invention. This method will enable the delivery of the transplanted RPE in a sheet of monolayer cells and will be better suited to perform their physiological function.

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